M.A.R.S. Making Aerospace Real for Students

May-June 2005

News

AEROSPACE EDUCATION

Inspiring Students to Excel

IN THIS ISSUE

Topics of Interest

Aerospace Education News is the official bi-monthly publication of the Civil Air Patrol and is produced by the Leadership Development and Membership Services Directorate, CAP National Headquarters, Maxwell AFB, Alabama.

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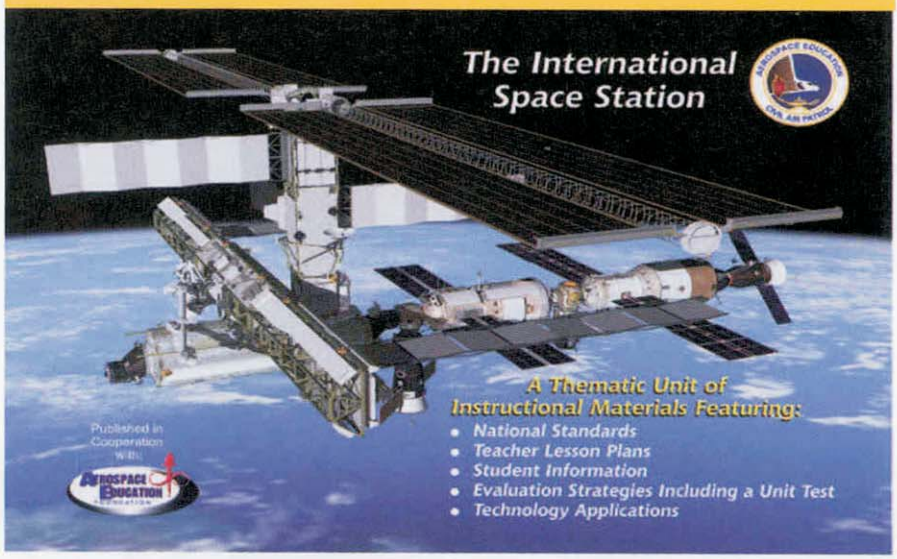
If you have news, events, or ideas we might consider for the newsletter, please submit them electronically to jstone@cap.gov.

Presenting...The International Space Station Thematic Unit



We are proud to announce a new product for our members. The International Space Station Thematic Unit will be sent to our units and Aerospace Education Members very soon. This unit includes two posters and an activity book of twenty lesson plans covering such subject areas as Mathematics, Science, Social Studies, Language Arts and Careers. From crystal growing to writing an article for a newspaper in the year 2050, this unit offers a multitude of activities to motivate students to learn more about this fascinating topic. As you use this unit, please take the time to respond to the evaluation in the back of the activity book. Photocopy the form and mail it to Civil Air Patrol National Headquarters, LMA, 105 South Hansell St, Bldg. 714, Maxwell AFB, AL 36112-6332.

Coming in 2006...National Conference on Aviation and Space Education !!!

As many of you know, the National Conference on Aviation and Space Education (NCASE) is undergoing a major overhaul. For 37 years, NCASE has been the nation's premier aerospace education conference, but in order to achieve financial stability and remain an effective educator's conference in today's society, we are restructuring the event. Plus, we are rebuilding our teacher base and incorporating many ideas to make NCASE more attractive to CAP members. NCASE

NCASE
National Conference on Aviation and Space Education
www.cap.gov/events/ncmain.html

is scheduled for October 19-22, 2006 at the Crystal Gateway Marriott, VA. Put this exciting event on your calendar today! Watch for more details at ***www.cap.gov/events/ncmain.html.***

A PROUD SPONSOR OF NCASE 2006... Wolf Aviation Fund

The Civil Air Patrol is very pleased to have a growing circle of aviation organizations participating in its annual aerospace education conference, the National Conference on Aviation and Space Education (NCASE). One of the sponsors for the next NCASE in 2006 is the Wolf Aviation Fund.

"I believe that NCASE is a remarkable and valuable event," says Rol Murrow, Executive Director of the Fund. "It permits educators interested in aviation and space education to meet others with similar interests, to learn about the resources available from more than fifty groups supporting aerospace education, and to network with national leaders of aviation and space education programs."

The Wolf Aviation Fund is a member group of the National Coalition for Aviation Education. Wolf Aviation Fund has exhibited at NCASE for many years and has presented seminars about resources available to educators. The Fund provides grants supporting aviation education, since that is one of its seven program areas. In addition it provides information to help individuals and groups become more successful with their projects.

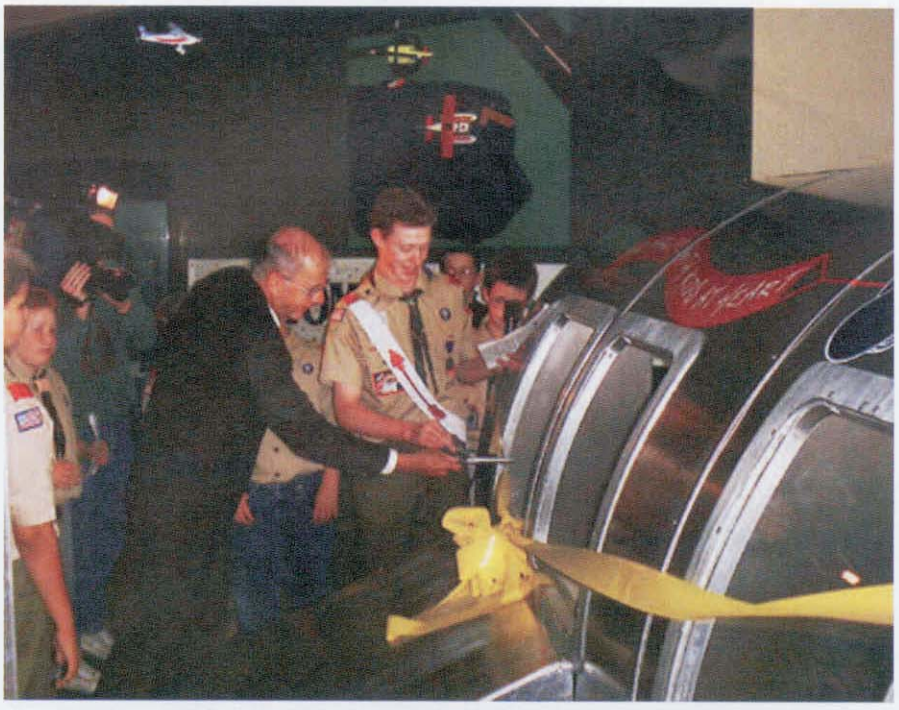
"While we do provide many small grants," says Murrow, "we also try to help applicants find alternative sources of help. Additionally, while we do not provide scholarships since there are many groups which do and few giving our kinds of grants, we still receive many scholarship requests. So we provide information on our site guiding students to sources of scholarships and flight training grants. We also awarded two significant grants that help students find all available scholarships and learn how to apply for them."

Wolf Fund grants take many forms and are usually small but have a wide ranging effect. For instance Corey Rennell, an Eagle Scout from Anchorage, Alaska, asked for help with a project he called FunAir. He wanted to build an aviation-oriented playscape for children waiting for flights in Anchorage's brand new airline terminal. In his own words from his proposal, "My question is, why can't a boring layover for a child turn into an educational journey exploring nature, science, technology, aviation, and the realm of the imagination?"

His grant enabled him to build his airplane-shaped activity center and open it at a ceremony attended by airport officials, aviation organization representatives, family, and friends. His design can now be a pattern for use in airline terminals across the nation.

Those interested in grant opportunities can learn more at the National Conference on Aviation And Space Education (NCASE) in 2006 or at ***www.wolf-aviation.org.***

"NCASE is a fantastic opportunity for both educators and those who wish to support their work," says Murrow. "I strongly encourage all those interested in aviation and space education to attend and to contribute to its activities."



Airport Manager Mort Plumb and Wolf Fund Award Winner Corey Rennell Cut the Ribbon: July 26 Dedication of FunAir playscape at Anchorage International Airport (FunAir Photo by Tom George)

IN THE AEM SPOTLIGHT...DR. NORM POFF

When you hear the phrase, "a lifetime of dedication to aviation," one of the people at the top of that list is Dr. Norm Poff. Dr. Poff has been involved with aviation professionally, educationally, and personally his entire career. His accomplishments include: lecturer on NASA's role in aeronautics and space research; presenter for NASA programs for schools, civic groups, and over 140 colleges and universities in all 50 states, Puerto Rico, and the US Virgin Islands; recipient of two NASA Group Service Awards (one for participating in the NASA Teacher in Space or TIS program as one of five original NASA instructors for TIS and the other for the Mobile Aeronautics Education Laboratory); recipient of two FAA SW Region Awards for outstanding contributions to aviation education; and recipient of a Lifetime Achievement Award by the Texas Earth Science Teachers Association in 2003.

Dr. Poff is a native of Roanoke, VA and resides in Dallas, Texas, with his wife Kathie. His educational background includes a BA in Economics and Business Administration from Roanoke College, VA; a MALS in science from Hollins College in Roanoke, VA; and an Ed.D. in Higher Education from Oklahoma State University in Stillwater, OK. His doctoral dissertation was a study of NASA Aviation Safety Research Programs in the 1980s. He completed additional graduate study at the University of Virginia, Virginia Polytechnic Institute and State University, Virginia Military Institute, the University of Northern Colorado, and the University of Wisconsin-Stout.

As a teacher in the Roanoke, Virginia School System, Dr. Poff taught aeronautics, computer science, economics, math, physics, and life and physical science. He also taught ground school at Virginia Western Community College. Norm was also a flight instructor for Piedmont Aviation in Roanoke. While pursuing a doctorate at OSU, he taught aeronautics courses in the Aviation and Space Education Department. During that time he was also an instructor for Flight Instructor Re-Certification Courses conducted by the Texas Division of Aeronautics.

A lifelong aviation buff, Dr. Poff's 6,000 plus item collection of aviation books, magazines, and artifacts dating from the 1920's is in the Virginia Museum of Aviation. He builds and flies RC (remote control) and indoor model airplanes and has a model on display at the National Soaring Museum in Elmira, NY.

Dr. Poff is a pilot with pilot in command time in 25 aircraft types, and is a flight instructor. He holds the following ratings: Commercial Pilot, Instrument Airplane, Airplane Single Engine Land and Sea, Airplane Multiengine Land, Flight Instructor Instrument Airplane, and Ground Instructor Advanced and Instrument.

Dr. Poff joined Civl Air Patrol as an Aerospace Education Member in 1982. He has been a regular attendee at the National Conference on Aviation and Space Education (NCASE), as well as presented workshops for teachers at the conference. Other contributions to CAP include presenting workshops at regional CAP conferences from New Jersey to Oregon and presenting a program at the CAP National Board. Norm and Kathie, have been active members in Civil Air Patrol for many years. He has combined his NASA experience and his love of education to promote aerospace education to future engineers, scientists and aviators. We congratulate Dr. Poff and wish him the best as he continues to spark the interest of the youth he touches with his unique talents.

Do you have a question???

Be sure to use our CAP knowledgebase at:
http://level2.cap.gov/visitors/cap_knowledgebase.cfm

IN THE AEO SPOTLIGHT...Maj Emmette Craver

Emmette Craver is a man on a mission....to inspire educators with the wonders of aerospace. Emmette's love of airplanes began, as many others, when he was just a child. As an "airport kid," he would ride his bicycle (at age 11 or 12) out to the local grass strip in Southeast Colorado. Along with his buddy, he would watch the pretty yellow Cub flying students and joyriders around the patch. In the afternoon, the boys would watch the plane take off and land, then help clean up before the plane was put away. "My efforts paid off as the summer season ended and I was finally given my first ride in an airplane. I was hooked!" Times were tough in the late thirties and there was no money for such foolishness as flying lessons. But after some time in college Emmette found himself in the Army National Guard, then the Air National Guard (where he served as a Crew Chief for an Aircraft Control and Warning Squadron - radar intercept). In the Air Guard he was able to join their Aero Club and soloed in a J-3 Cub. Working full time for the Guard, he was able to buy an Aeronca Super Chief for $750 and earn his private pilot's license with it.

After earning his Second Lieutenant's bars from his Guard unit, Emmette soon jumped through all the hoops to be selected for pilot training. Training started at Moultrie, Georgia, in T34s and T-28s. Then it was on to Laredo for T-33 jet training, followed by F-86 training for his Air Guard outfit. He went back to his unit at Buckley (Colorado) and flew P-80s and F-86Ds. As he started transitioning into F-100s in 1961, things heated up in Berlin. In the interim he had flown as a Flight Engineer for United Airlines (DC-6 and 7) from 1957 to 1958 until layoffs caused him to make a choice between a full time Guard position and an uncertain airline career.

The many faces of Major Emmette Craver

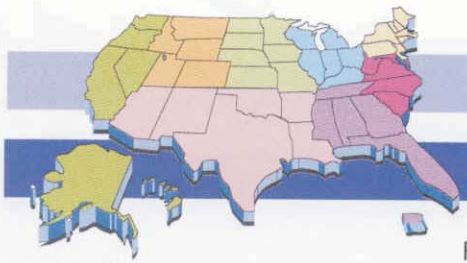
In 1961, Emmette made the choice to become active duty USAF and was soon flying F-105s first in Seville, Spain, and then in Bitburg, Germany, with the nuclear alert mission. Toward the end of his tour his unit transitioned to F-4s and Emmette was sent to fill a pilot shortage in Vietnam.

Emmette retired in 1977, after 27 1/2 years of military service and 357 combat missions, the Silver Star, three Distinguished Flying Crosses, a Bronze Star, and 22 Air Medals!

Emmette retired in Austin, Texas, where he was active in Experimental Aircraft Association's Chapter 187 and later moved to Waco, Texas, where he continued his EAA affiliation in Chapter 59.

In the late nineties, Emmette was asked to do some ground school work for the CAP Flight Academy in Waco. Emmette developed a week-long ground school covering the finer points of the regulations; taught aerodynamics of the airplanes; set up a program of cadets role-playing tower operator or pilot making radio calls; covered such topics as weather, aircraft performance, weight and balance problems and much more.

From these first experiences with CAP, Emmette and his wife, Kathy, became involved with the Texas Wing. They were asked to serve as External Aerospace Officers for the Wing and have done a wonderful job in working with and inspiring educators in Texas. But Emmette's enthusiasm is not limited to Texas. He has also been an inspiring resource for CAP's involvement with EAA AirVenture. From helping at KidVenture to sharing with teachers on Education Day, he has truly been not only a great motivator, but also a great representative of CAP. We thank Emmette for all his dedication and hope he continues to captivate and inspire those who will pass on the aerospace adventure to our next generation of air and space lovers.



REGION TO REGION

NORTHEAST REGION

May 25-28
The Middle Atlantic Planetarium Society will hold its conference in Philadelphia, PA, at the Fels Planetarium. For more details, go to ***http://www.maps-planetarium.org/***
June 26
Science Workshops for Educators will be conducted at the Penn State University Park campus in State College, PA. For more information, go to ***http://www.outreach.psu.edu/C&I/Science4Educators/.***

MIDDLE EAST REGION

May 7
CAP North Carolina Wing Aerospace Education Day will be held at three locations:

- Western Location for Groups 1,2,4: Hickory Municipal Airport
- Central Location for Groups 3,5,6: Burlington-Alamance & Wing HQ
- Eastern Location for Groups 7,8: Cherry Point MCAS CAP NC members - Decide which event you will attend and contact your chain of command. If you have further questions about this event, contact RW Harkness Maj. CAP at: airhark @juno.com.

June 5-7
Attend the Small Aircraft Transportation Systems (SATS) proof-of-concept demonstration at the Danville Regional Airport in Danville, VA. For more information on this event, go to ***http://sats2005.com/home.html.***

GREAT LAKES REGION

June 18-19
The Aero Expo 2005: Defenders of Freedom Air Show will be held at the Akron Fulton Airport in Akron, OH. To find out more, go to ***http://www.mapsairmuseum.org/.***
June 28-29
Educator workshop on Satellite Meteorology will be held at the University of Wisconsin Atmospheric, Oceanic & Space Science building in Madison, WI. For more information, go to:***http://cimss.ssec.wisc.edu/satmet_workshop/.***
July 10
Civil Air Patrol Fly-In will be held at the Sawyer County Airport in Hayward, WI. To get more information on this event, call 715-634-2801.

SOUTHEAST REGION

May 14-15
AirFest 2005 will take place at the Tallahassee Regional Airport in Tallahassee, FL. The information for this Fly-in can be found at ***http://eaa445.org/airfest/.***
May 15 - June 3 (Launch Window)
Watch for the Space Shuttle Return to Flight with the launch of STS-114 from Kennedy Space Center in FL. For more updates about this mission, go to ***http://www.nasa.gov/centers/kennedy/home/index.html.***
May 21-22
An Air Show honoring our nation's military will be presented by The Natchez Aviation Foundation on Armed Forces Day at the Natchez-Adams County Airport in Natchez, MS. Details can be found at ***http://www.natchezairfair.com.***

NORTH CENTRAL REGION

June 4-5
Wings of Remembrance, an air show and aviaton event, is dedicated to remembering the sacrifices of those who have defended us, and honoring the courage of those who defend us today. This event will be held at Newton City County Airport in Newton, KS. For details, go to ***http://www.contrails.us/~wingsremembered/68.00_Wings_of_Remembrance/index.htm.***
June 25-26
The Joplin Airfest 2005 will be held at the Joplin Regional Airport in Joplin, MO. This year's theme is a salute to the Korean War veterans. For more information, go to ***http://www.airfestjoplin.com/.***
July 9-10
The Fargo Air Show 2005 will be held at the Fargo Air Museum in Fargo, ND and will feature the Blue Angels. For more information, go to ***http://www.fargoairsho.com.***

SOUTHWEST REGION

May 13-15
The Texas Fly-In (also known as the EAA SW Regional) will take place at the Hondo Airport in Hondo, TX. For more on this event, go to **http://www.swrfi.org/fly_in.htm.**
May 22
The Denton Air Fair will take place at the Denton Airport in Denton, TX. For more information, go to ***http://www.cityofdenton.com/pages/enjoyfestairfair.cfm.***
June 13
Astronomy Camp 2005 is offered to teens, adults and educators through the University of Arizona Alumni Association and Steward Observatory. For complete details, go to ***http://www.astronomycamp.org/.***
June 21-24
An Aerospace Education Workshop will be held at Tarrant County College, NW Campus, in Fort Worth, TX. For a flyer and registration information, go to ***http://www.vintageflyingmuseum.org/docs/aviation101_2005.pdf.***

(Continued on page 6)

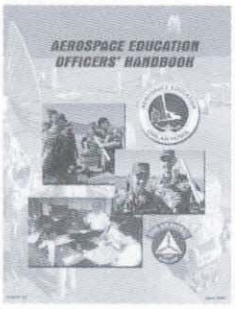
AEO NEWS AND VIEWS

AEF Summer Grants

We continue to receive outstanding support from the Aerospace Education Foundation (AEF). Since 1996, AEF has provided over $125,000 in grants for CAP units and CAP educators who promote aerospace education within CAP and the classrooms of America. CAP and AEF have reached thousands of cadets and students for aerospace education with this grant program.

Our next cycle is a CAP unit grant cycle with a deadline of June 30th. Please get your applications to us by then. You can mail the application or fax it to us using the address at the bottom of the application. Please remember that grant winners are required to complete the feedback form also included on our website. This is a very important step in the continuation of this grant program. The form takes only a couple of minutes to complete. It is imperative that we continue to show our appreciation for the outstanding support given to us by AEF.

Aerospace Education Officers' Handbook



The Aerospace Education Officers' Handbook, CAPP 15, is undergoing revision. We hope to have it to you by this summer. It features easy to follow instructions and covers all the topics that the AEO comes in contact with during the course of his/her duties.

CAPR 280-2 and CAPP 215 are also being revised. CAPP 215 will be completed soon; however, CAPR 280-2 is in coordination and must also be ratified by the CAP National Board. Our goal is to present CAPR 280-2 at the National Board in August 2005. Hopefully, the regulation will be ratified and be available soon after that.

National Aerospace Education Officers School

The fourth annual National AEO School will be held at Pensacola NAS, Florida, from July 21-23, 2005. This school brings together wing, region, and headquarters staff presenting valuable information to the attendees concerning CAP's aerospace education mission, aerospace education programs, and the job responsibilities of our members. For registration and more information go to: ***www.cap.gov/ae*** and click on item number 10.

FREE Online Aerospace Education from FSRI

You may already be aware of the Advanced Learning Environment (ALE) online educational system from the Florida Space Research Institute (FSRI). You may have even registered and taken some of the ALE's self-paced interactive courses. However, FRSI recently announced an exciting new ALE development which will now make access to its catalog of aerospace education modules **free for the Civil Air Patrol nationwide. For more about this offer, go to *www.cap.gov/ae.***

Region to Region (Continued from page 5)

SOUTHWEST REGION (CONT.)

Jul 10-13
Passport to the Future Teacher Workshop - This workshop takes place on 10-13 July 2005, in conjunction with the Joint Propulsion Conference & Exhibit. Join presenters from AIAA, Civil Air Patrol, NASA, and others to learn about ways to excite students about math and science. If you are interested in the "technical" aspects of aerospace education, this is the workshop for you. Teachers last year were wowed by the exhibits, technical sessions and hands-on activities in the concurrent sessions. Hear Sally Ride, keynote speaker for the Joint Propulsion Conference. Tucson Convention Center -Tucson, Arizona. For more information, go to ***http://www.aiaa.org/.***

ROCKY MOUNTAIN REGION

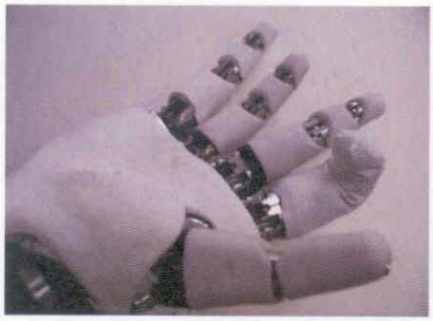
June 25-26
The 2005 Rocky Mountain EAA Regional Fly-In will take place at Front Range Airport in Denver, CO. For more details, go to: ***http://www.rmrfi.org/.***

PACIFIC REGION

July 2-4
The Ninth Annual 4th of July Giant and Quarter Scale Fly-In will be held at Ward Hendricks Field in Oakdale, CA. This is the premier R/C (remote controlled) flying site in California. For more, go to ***http://www.rcflyersunlimited.com/FlyersEvents/2005%20July%20Flyin%20Flyerpdf.pdf.***

Curriculum Corner... Robotic Hand

(Coming soon in AEX I, Volume II)



Objective:
In this activity, students will individually construct a single robot finger that resembles a finger on a human hand. Working in teams, robot fingers will then be combined together to pick up objects (such as marshmallows).

Grade Level: K-5

National Science Standards:
Content Standard E: Science and Technology
- Abilities of technological design

Unifying Concepts and Processes
- Evidence, models, and explanation

Materials:
- Stiff paper (60 + pound stock) preprinted with pattern (see page 8)
- Cellophane tape
- String
- Paper punch (one-hole)
- Scissors
- Marshmallows or other objects to pick up

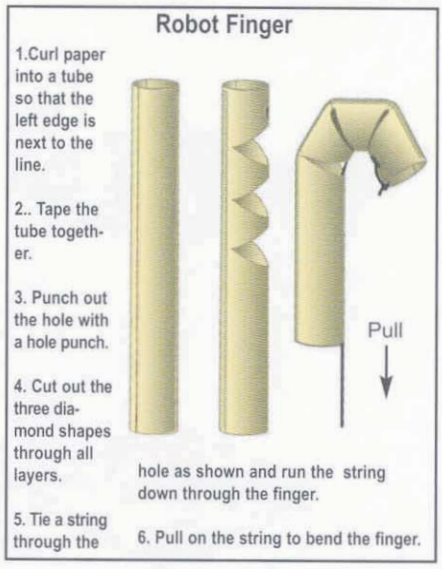
Background Information:
The word robot comes from the Czech word robota that means forced or repetitive labor. Czech playwright Karel Capek coined the term for his 1920 play R.U.R. (Rossum's Universal Robots). In the play, the human-like robots take over the world.

Today's robots usually look very different from humans. They are found in manufacturing, research, medical treatment, entertainment, and space. NASA uses robots to explore Earth and the other planets and to manipulate payloads on the Space Shuttle and the International Space Station.

The definition of what a robot is varies with the source referenced. Generally, robots are machines that operate by computer controls. On Earth, robots are often used for dangerous, dirty, or dull jobs. Examples include painting and welding robots in automotive assembly lines and robots used to dismantle old nuclear power plants. In NASA-sponsored experiments, walking robots were used to explore active volcanoes in Alaska and the Antarctic.

One of the most important objectives in the development of robots is to enable robots to interact with their environment. Interaction is often accomplished with some sort of arm and gripping device or end effectors. This type of robotic activity was used aboard the Mars Rovers, Spirit and Opportunity.

Procedure:
1. Roll the paper into a tube. Use the guide line on the paper to determine the diameter of the tube. When rolled, the three diamonds and the small circle should be on the outside.
2. Tape the tube together along the entire seam.
3. Pinch the tube slightly and cut out the diamond shapes through all layers of the tube.
4. Punch a hole through the tube where the circle is located.
5. Tie a string to the tube through the punched hole. Drop the other end of the string through the tube to the other end.
6. Pre-bend each finger joint (diamond cutouts).
7. While holding the bottom of the tube in one hand, pull the string with the other to cause the finger to bend. When you release the string, the fingers will straighten out again.

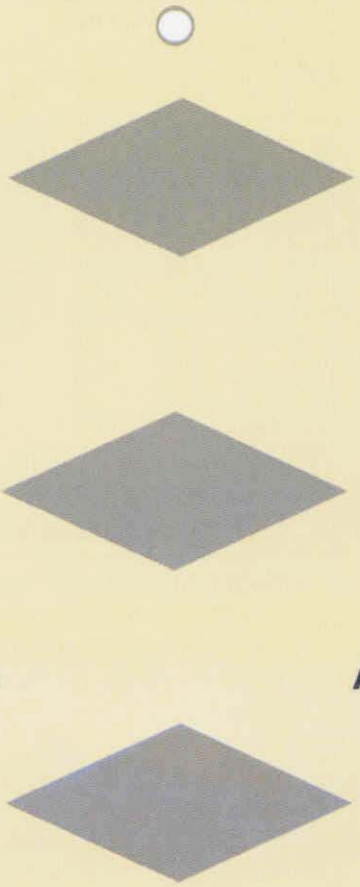


To Create the Robotic Hand

1. Create the five-finger hand by taping five fingers around a plastic 1 liter water or soda bottle.
2. A dowel fitted into the bottle opening can be used for a robot arm.
3. Note: Tie loops at the free end of the strings and insert fingertips into the loops to control the motion of the fingers like a regular hand.
4. Have teams test their hand when completed and compete to see which team can pick up the most marshmallows from a plate and put into a bowl in a given amount of time.

Teams build completed robot hand

Pattern for Robotic Finger



Enlarge this page to 8.5"X11". Use the whole sheet of paper to roll the tube for the robot finger beginning from the right side. The diamonds should be on the outside and the letters A and B next to each other. Tape together from top to bottom.

Start rolling here. →